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The special features of the hypophysis of the tiger shark, *Galeocerdo arcticus*, are most clearly shown by comparison with corresponding structures in a typical form, such as the primitive shark *Heptanchus*. In the latter the three essential parts of the hypophysis, anterior lobe, intermediate or superior lobe, and ventral or inferior lobe, lie in the characteristic position immediately posterior to the optic chiasma. The elongate hollow anterior lobe lies in a groove between the inferior lobes of the brain. The somewhat rounded slightly bilobed solid intermediate lobe is situated posterodorsally to the anterior lobe and attached to the thin-walled, ventroposterior prolongation of the infundibulum, the saccus vasculosus. The ventral lobe in *Heptanchus* and *Heptranchias*, and presumably in all the primitive sharks (Hexanchidae), is situated far ventral to the other lobes, in a chamber in the floor of the cartilaginous brain case, called by some observers "sella turcica." Connecting the ventral with the anterior lobe is a long slender stalk, the interhypophyseal stalk. In the primitive sharks it has been noted by Sterzi ('09), Stendell ('14) and others that the intermediate lobe in Heptanchus, which in other sharks is composed of solid cords, has in its composition hollow tubular structures that open into the cavity of the saccus vasculosus, that is, the brain cavity. It has been assumed that these tubes are glands.

Some recent investigators (Butcher ('36) and Lewis and Butcher ('36) consider the elasmobranch hypophysis as made up of six distinct lobes: anterior lobe with two distinct parts: 1. pars distalis and 2. pars medialis; 3. intermediate lobe; 4. ventral lobe; 5. saccus vasculosus; 6. neural lobe, the part of the saccus vasculosus to which the intermediate lobe is attached ("Hirnteil" of Stendell, hypophyseal area of Sterzi.)

In contrast with Heptanchus the tiger shark shows a very distinct knob-like enlargement of the anterior end of the anterior lobe. Obliquely placed grooves divide the knob into lappets. Sections of the knob show that it is vesicular or follicular in its microscopical structure, and stains more deeply with hematoxylin than do other parts of the anterior lobe. As a pars distalis the knob is very distinct from the elongate pars medialis with obliquely

folded wall. The superior or intermediate lobe has the structure characteristic of the sharks in general, none of the hollow tubular structures found in the primitive sharks. In fact these problematic, tubular structures seem to be restricted to the primitive forms (Hexanchidae). In the adult tiger shark the ventral lobe is a hollow transverse bar or sac that has lost all connection with the anterior lobe from which it has been derived. In tiger shark embryos of 170 mm. body length a slender solid cord, interhypophyseal stalk, can be detected connecting the transversely lying ventral lobe with the anterior lobe. In the adult condition in Galeocerdo the ventral lobe seems largely functionless. Instead of lying posteriorly in a deep hollow in the cartilaginous cranial floor the ventral lobe of the tiger shark is situated in the densely fibrous dura or endocranium anterior to all other parts of the hypophysis. The saccus vasculosus which in elasmobranchs in general has an abundant blood supply in its walls and in most instances an unusually large innervation by brain tracts, has in the tiger shark a scanty blood supply and an almost vestigial innervation. Somewhat similar conditions prevail also in the thresher shark, *Alopias*, and the mackerel shark, *Isurus*.

In sharks in general the longitudinal axis of the hypophysis lies parallel or approximately parallel with the longitudinal axis of the brain. In the tiger shark, however, the longitudinal axis of the hypophysis is approximately at an angle of 45 degrees with the longitudinal axis of the brain. The pars distalis is in contact with the optic chiasma and the pars medialis extends postero-ventrally to be anchored along with the intermediate lobe by a fibrous attachment to the floor of the cranial cavity.

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